maximum of 1000 kW.[35] We also stated that if future field testing and studies show that higher power is needed to provide a satisfactory level of replication or that changes in the treatment of interference are warranted, we will be able to evaluate those results at our planned two-year review and consider whether adjustments are needed.[36] In order to allow broadcasters to study this matter, we stated that we will entertain requests for a limited number of stations to experiment at power levels higher than those specified for individual allotments in the DTV Table.

60. Many parties representing existing UHF station interests request that we reconsider our policy with respect to the amount of DTV power authorized for UHF stations. These parties include ALTV, Blade, Media General, Inc. (Media General), Paxson Communications Corporation (Paxson), Pegasus Communications Corporation (Pegasus), Sainte Partners II, L.P. (Sainte), the Sinclair Broadcasting Group (Sinclair), Sullivan Broadcasting Company (Sullivan), Trinity Christian Center of Santa Ana, Inc./Trinity Broadcasting Network (Trinity), Univision, US Broadcast Group and Viacom, Inc. (Viacom). These parties generally submit that our approach for replicating broadcasters' NTSC Grade B contours creates a serious and unfair competitive disparity between existing UHF stations with UHF DTV channels (U-to-U stations) and existing VHF stations with UHF DTV channels (V-to-U stations).[37] They state that as a result of our Grade B replication policy, V-to-U stations receive power levels of up to 20 times higher than U-to-U stations. They state that the power levels provided U-to-U stations are generally so low that these stations will be unable to provide high-quality service within their core business areas, where most of their audience is located and where most of their revenue is generated.[38] They express concern that at such power levels they may not be able to serve even close-in viewers that use indoor "rabbit ear" or loop antennas. On the other hand, they note that the high power levels of V-to-U stations will provide those stations with a significant margin for error in the event that the DTV system's real world performance does not match its effectiveness in the laboratory. A number of these parties are concerned that U-to-U stations will also be at a significant disadvantage in the delivery of ancillary services, such as transmission of data to computers with low gain antennas.[39]

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[35] These minimum and maximum power levels are for UHF channels only. The minimum DTV allotment powers for VHF channels are 1 kW for lower VHF channels and 3.2 kW for upper VHF channels.

[36] See Fifth Report and Order for description of our two-year review.

[37] These parties, in general, do not request we adopt an approach that would equalize the service areas of UHF and VHF stations. ALTV, for example, submits that most UHF stations would be satisfied with the *status quo* vis-a-vis the existing disparity between UHF and VHF facilities. Paxson similarly states that it is not arguing for elimination of the advantage that VHF stations now have over UHF stations in the analog environment. Rather, it seeks to eliminate a new competitive disparity that the Grade B replication approach has introduced for U-to-U stations. Sullivan, on the other hand, rescinds its previous support for the service replication concept.

[38] See, for example, the petition for reconsideration filed by Sinclair.

[39] See, for example, the petition for reconsideration filed by ALTV.

61. These parties also submit that service maximization offers only illusory benefits for addressing the UHF power problem because many allotments are located in congested areas where, as a practical matter, it is not possible to increase power and coverage. A number of these parties also object to the decision to reduce the DTV receiver noise figure for UHF from 10 dB to 7 dB, while raising the DTV receiver noise figure for VHF from 5 dB to 10 dB.[40] They argue that these changes were unwarranted and have the effect of further increasing the power disparity between U-to-U and V-to-U stations.

62. The petitioners submit a number of suggestions for resolving the UHF power problem. Paxson, Pegasus, and Sinclair argue that in determining whether or not a station can increase its power, we should weigh interference to another broadcaster only where such interference occurs inside an affected station's Grade A contour, rather than inside the station's Grade B contour.[41] ALTV suggests a similar approach and proposes that we permit power increases by U-to-U stations on a case-by-case basis, using a more lenient definition of interference in the Grade B area (outside the Grade A contour). Specifically, it submits that in calculating DTV-to-NTSC interference within an NTSC station's predicted Grade B coverage area, we should permit a higher predicted field strength of the undesired or interfering signal by using the F(50,50) curves in lieu of F(50,10) curves.[42] Under this approach, the existing definitions of interference using F(50,10) curves would be used within the predicted Grade A contour of the affected NTSC station, and no new interference would be permitted within the Grade A contours of either NTSC stations or DTV stations. ALTV states that if the applicant satisfied the above standards, its proposed increase would be further evaluated under a set of public interest criteria relating to cumulative and area/population-specific interference to affected stations and the need for increase. Viacom supports use of the relaxed interference standard and public interest criteria recommended by ALTV, and argues that its application should be limited to only UHF stations. It submits that U-to-U stations willing to sacrifice portions of their Grade B service areas in order to ease the power disparity should not be made to lose any of their Grade B or Grade A service areas at the expense of V-to-U stations that have already been assigned higher operating power levels. It further requests that we clarify that as part of our two-year reviews we will take whatever actions are necessary to maintain the competitive posture of UHF and VHF stations, even if such action involves amending the DTV Table.

63. Blade, Grant Broadcasting Group (Grant), and Media General request that stations be

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[40] See, for example, petitions of Fox, Paxson, Sinclair, Sullivan, Univision, and Viacom. The receiver noise figures assumed for DTV service were listed in the planning factors in Appendix A of the Sixth Report and Order.

[41] Sinclair offers this option in the event we maintain our Grade B contour replication policy, rather than adopt its suggestion to revise our allotment criteria and adjust the Table.

[42] The FCC F(50,50) and F(50,10) field strength charts are use to predict service and interference. They estimate the field strength of a signal at a percentage of locations for a given percentage of time. For example, the F (50,50) curves estimate the values at which the field strength of a signal is exceeded at 50% of the locations for 50% of the time. Using the F(50,50) rather than the F(50,10) curves will permit a higher level of undesired signal.

permitted to increase and maximize power now, in the reconsideration process, rather than in individual modification applications. Blade argues that acting now on power increases would avoid costly and time-consuming procedures and conserve our administrative resources. Blade states that we should designate the current Table as an "interim Table" and allow parties additional time to bring engineering solutions (including facilities requests) to the Commission. Grant and Media General submit that maximizing power now would resolve fairness questions in the transition process. Media General also argues that maximizing power now would allow the Commission and licensees to focus on addressing the real engineering issues certain to arise in implementing DTV. Media General states that we should permit stations to increase their power upon a showing that any predicted interference can be avoided through engineering techniques such as using directional antennas, moving transmitter sites or using terrain shielding. Sullivan also supports increasing power, but states that it is unlikely that many stations will be able to meet a "no new interference" test in requesting an increase in facilities. It recommends that we permit power and/or antenna increases as long as no more than 5 percent of the homes of a co-channel or adjacent channel station receive interference. It states that this represents a reasonable *de minimis* standard for interference. Sullivan also states that we should permit the use of directional antennas to shape signals in order to protect stations from harmful interference.

64. Viacom suggests an "intermediate maximization" plan for U-to-U stations. Under this plan, a 3-month "window period" would be provided for submission of requests to increase power to 250 kW for those U-to-U stations that are assigned power levels more than four times less than that assigned to the highest powered station in the market. It states that such maximization requests should be granted provided that they are feasible within the confines of the Table using accepted engineering remedies. It states further that any mutual exclusivity or conflicts should be resolved first by negotiations and, if that fails, by the Commission such that each affected party is permitted a proportionate level of maximization. In its supplemental filing, Viacom states that a study of the DTV Table conducted by its consulting engineers indicates that if the power of 964 UHF DTV stations were raised to 250 kW, 93 percent of all stations would experience only 1 percent or less increased interference. It further states that under this scenario 3.7 percent of all stations would experience between 1 and 2 percent increased interference, and 2.3 percent would experience between 2 and 5 percent increased interference. Viacom submits that this minimal increase in interference, balanced against the ability of U-to-U stations to better compete within their Grade A contours, warrants adoption of its "intermediate maximization" plan.

65. Fox and Sinclair recommend solutions based on employing the vertical beam of the transmitting antenna to place the energy where it is needed. Fox states that mechanisms such as beam tilt would maximize station coverage and service without increasing interference. Sinclair submits that a technically achievable option would be to allow U-to-U stations to radiate at the same power as the maximum allowed for V-to-U stations, *i.e.* 1000 kW, as long as they directed that power so that it did not produce a field at their Grade B contour that was greater than the equivalent of their current allotted DTV power. It states that this approach would achieve true replication of the Grade A coverage for UHF stations, preserve the interference protection built

into the current DTV Table and allow VHF stations to reach their Grade B viewers.

66. ALTV, in its November 27, 1997, *ex parte* filing, proposes that we permit all UHF DTV stations to increase power to 1000 kW, provided tilt-beam antennas and/or other technologies are employed to prevent any incremental visible interference.[43] It submits that this proposal is intended to address situations where a station is not expanding its overall coverage area, but rather desires to increase its signal strength within its protected contour without increasing the field strength at the protected contour. ALTV also proposes that we adopt procedures for resolving interference disputes that might occur as a result of such power increases. These procedures would include field strength and interference tests by the station and an accelerated dispute resolution procedure for stations that perceive that they would be subject to additional interference. Many parties representing UHF broadcast interests support the approach as set forth in ALTV's *ex parte* filing.[44] For example, Chris-Craft/United Group states that the ALTV's proposal contains sensible procedures for allowing power increases and resolving engineering disputes expeditiously without causing additional interference. Sullivan states that ALTV has proposed a sensible and much needed procedure by which U-to-U stations will be able to achieve some competitive parity with their V-to-U neighbors. Its supports the ALTV proposal as one mechanism to address that UHF power imbalance.

67. In a joint filing, a number of UHF Broadcasters (Joint UHF Broadcasters) support the ALTV proposal as one component of a two-part solution to the power problem.[45] They suggest a second component based on a revised version of the immediate, across-the-board, power maximization plan previously proposed by Viacom. Under this plan, the DTV Table would be modified to increase the power of all UHF stations to at least 200 kW, provided that such increase does not create more than 2 percent additional interference to the population of any NTSC station.[46] They state that this increase in interference is *de minimis* and will affect the

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[43] See *ex parte* letter filed by ALTV on November 25, 1997, as discussed above.

[44] See, for example, comments submitted in response to ALTV *ex parte* filing by Chris-Craft/United Group, Communications Corporation of America, Entravision Holdings, LLC, FBC Television Affiliates Association, Granite Broadcasting Corporation, Illinois Broadcasters Association, Malrite Communications Group, Inc., P&LFT, LLC, Pappas Telecasting Companies, Paxson Communications Corporation, *et. al.*,Sinclair Broadcast Group, Sullivan Broadcast Company, Telemundo Group, Inc., Univision Communications Inc., UPN Affiliates Association, and, WB Television Network.

[45] The Joint UHF Broadcasters include: Clear Channel Television Licensees, Communications, Corporation of America, DP Media, Inc., Glencairn Ltd., Grant Broadcasting Group, Jasas Corporation, Max Media Properties, L.L.C., Pappas Telecasting Companies, Paxson Communications Corporation, Pegasus Communications Corporation, Sinclair Broadcast, Group, Straightline Communications, Sullivan Broadcasting Group, Telemundo Group, Inc., Univision Communications, Inc., and Viacom.

[46] The Joint UHF Broadcasters also propose two exceptions to the two percent rule. First, if the station is predicted to receive population interference of 15 percent or greater, they indicate that no additional interference would be permitted. Second, for those stations that experience no existing population interference, they would

analog operations of UHF stations generally at the outer edges of their Grade B contours where service is already typically degraded and cable service has higher penetration. They state that the UHF analog community is willing to accept this slight potential interference in order to continue to reach existing viewers in their core service area. The Joint UHF Broadcasters indicate that preliminary studies conducted by Viacom and MSTV reveal that all but a small percentage of the over 800 stations now assigned less than 200 kW could increase their power to that level under this proposal.

68. AAPTS/PBS share the concerns articulated by ALTV and many UHF broadcasters. They state, however, that ALTV's proposed enforcement procedures simply cannot be implemented in a practical and workable manner and would place an unfair burden on aggrieved stations. In lieu of the ALTV proposal, AAPTS/PBS reiterate their support for Viacom's suggestion to establish a special window during which only UHF licensees assigned UHF DTV channels could request permission to use higher power levels and directional antennas. Lincoln opposes ALTV's automatic grant of power increases but supports a policy permitting applicants to request power increases based on beam-tilting and other interference abatement techniques. SHBC argues that the ALTV process would over burden the Commission, cause needless cost and effort to stations receiving interference and compromise NTSC and DTV service to the public.

69. MSTV states that ALTV's beam-tilt proposal raises serious technical and other issues. It submits that while the beam-tilt antenna may be useful to solve coverage and interference problems, if used with proper engineering practice, the ALTV proposal appears to permit an "excessive ratio of power at the radio horizon to power within the service area."[47] MSTV also states that ALTV's proposal to place the burden of proof on stations suffering interference should not be accepted and that its scheme for proving interference, including field measurements, is imprecise and cannot be implemented as currently presented. It further states that the use of Designated Market Areas (DMAs) instead of the Grade B contour could result in confusion and loss of service. Cosmos is concerned that beam-tilting could have a significant effect on power radiated toward the radio horizon. It urges that we reject the use of beam-tilting except where it is demonstrated, on a case-by-case basis, that under maximum deflection conditions its use would not create interference to neighboring stations.[48] In a joint filing, ABC, Inc., CBS Broadcasting Inc., and National Broadcasting Company (the Networks) submit comments limited to ALTV's *ex parte* filing. The Networks state the ALTV proposal need not be acted upon before the Commission adopts a final DTV Table. They submit that not enough has been done to quantify the UHF power problem and solutions and that these issues therefore should be considered separately from the DTV Table.

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allow 3 percent rather than 2 percent interference.

[47] See comments submitted by MSTV on December 17, 1997, at p. 9.

[48] See also comments submitted by Pulitzer on December 17, 1997, at pp. 5-6.

70. On January 6, 1998, MSTV submitted a letter setting forth its proposal for a *de minimis* interference standard for dealing with requests for minor DTV facility changes and UHF stations' requests for power increases up to 200 kW during the DTV transition. Under MSTV's proposal, which is similar to the *de minimis* standard suggested by the Joint UHF Broadcasters, power increases and facility changes would be permitted provided that the increase or change does not create more than 2 percent additional interference, in the aggregate, to the population served by either a DTV or NTSC station.[49] MSTV further states that an additional one percent be permitted under certain circumstances in the acute problem areas (i.e., the Northeast, Great Lakes and California). It states that this standard would help expedite the application process and speed the DTV build-out.

71. Fox, Paxson, Sinclair, Sullivan and Viacom also request that we use a 10 dB DTV receiver noise figure for all frequencies. They request that UHF power levels be adjusted upwards to reflect this higher noise figure.

72. The Joint MSTV Petitioners support our decision to develop the DTV allotments based on the receiver noise figures recommended by the Broadcasters' Caucus Technical Committee, i.e., a 10 dB noise figure for the VHF band and a 7 dB noise figure for the UHF band.[50] They indicate that they have examined the DTV allotments using power levels consistent with a 10 dB noise figure for all channels and have found that it shows substantially increased interference to NTSC DTV service and less replication.[51]

73. The Joint MSTV Petitioners submit that for some stations the service areas and other statistics shown in the DTV Table do not reflect the actual DTV service areas that are protected under the rules. They contend that many stations given the 50 kW UHF power minimum will have protected DTV service areas that extend beyond their NTSC Grade B contours and that these increases are not reflected in the Table. They note that, on the other hand, for stations subject to the 1000 kW cap, the DTV Table counts all population and area served within the Grade B even though in some instances such service may not be protected under the rules. To address this concern, the Joint MSTV Petitioners request that we modify the rules to comport

[49] The amount of permissible interference would vary slightly depending on the amount of interference experienced by the affected station. Where an affected stations currently experiences 1 percent or less population loss from interference, 3 percent additional interference, in the aggregate , would be allowed. Where the affected station currently experiences 15 percent or more population loss due to interference, no additional interference would be permitted.

[50] See Sixth Report and Order, at para. 193. The Joint MSTV Petitioners also submit that the VHF noise figure includes a 5 dB atmospheric noise adjustment.

[51] They note that a 10 dB noise figure would increase the number of larger stations subject to the DTV power cap from 306 to 581.

with Appendix B's treatment of stations subject to the power cap.[52] In this regard, they state that Section 73.622(e) should provide that an existing station will receive protection out to its NTSC Grade B contour or DTV coverage contour, whichever is greater. The Joint MSTV Petitioners also argue that exceptions to the 1000 kW DTV power cap may be needed to ameliorate substantial replication shortfalls. They therefore submit that we should permit limited experimental operations at power levels above 1000 kW, and in our planned two-year review, consider an across-the-board relaxation of the power cap if appropriate.

74. AAPTS/PBS states that it supports the existing 1000 kW maximum power level and that exceptions to the power cap should be allowed only in limited cases where necessary to correct serious replication problems. Viacom, in its opposition/comments filing, requests that we deny requests for reconsideration that would exacerbate the VHF/UHF power disparity, particularly those proposals that advocate providing a protected area equivalent to the Grade B contour, creating exceptions to the 1000 kW power cap, and eliminating the cap.

75. Longmont Channel 25 ("Longmont") and Viacom, Inc. ("Viacom") request additional information regarding the procedural framework for processing applications to maximize DTV facilities. Viacom defines maximization as any extension of the Grade A or Grade B contour of a DTV facility from that authorized, either by construction permit or by the Table of Allotments. Viacom requests that the Commission classify any such application as one for a major change, making it subject to the "cut-off" procedures of Section 73.3572 of the Commission's Rules. This would provide other parties the opportunity to file applications that are mutually exclusive with the major change application.

76. Under Viacom's proposal, mutually exclusive applicants would be required to negotiate a settlement within a certain period of time. Settlement agreements could include the voluntary funding of upgraded technical equipment for noncommercial stations in exchange for ceding a portion of the requested area of maximization. If mutually exclusive applicants could not reach a settlement, the Commission should then refer the matter to a "geographically relevant, neutral industry coordinating committee" for resolution, and the Commission would determine whether the Committee's proposed settlement would serve the public interest.

77. Viacom requests that the Commission not limit the parties eligible to submit maximization applications to broadcasters that already hold DTV licenses or construction permits. Because expanded coverage allows a station to serve a larger segment of the viewing public, Viacom argues that all stations assigned to DTV channels in the Table of Allotments should be eligible to participate in the maximization process, regardless of whether they have a construction permit. Otherwise, according to Viacom, those stations subject to the earlier construction timetable (*i.e.*, network affiliates in the top 30 markets) will have a distinct advantage over all other stations. Viacom suggests that those stations without construction

[52] CPC supports the Joint MSTV Petitioners' request that we change the rules to provide interference protection out to the NTSC Grade B contour for all stations subject to the 1000 kW cap.

permits should be allowed to utilize the station parameters relied upon by the Commission in constructing the table or other valid information, and it also urges the Commission to adopt cut-off procedures under Section 73.3572 for applicants seeking to maximize their DTV service areas.

78. Decision. In the Sixth Report and Order, we attempted to address the concerns of many existing UHF broadcasters with the service replication approach.[53] In this regard, we established a 50 kW minimum UHF power level as part of the DTV allotment process, so that all UHF DTV stations were assigned at least 50 kW as their DTV power even in cases where less power was needed for service replication.[54] We also established a power cap of 1000 kW. Both of these actions were intended to reduce the disparity between existing UHF and VHF stations. We also provided rules and procedures for stations to "maximize," or increase, their service areas provided they do not cause interference to other stations.

79. We recognize the petitioners' concerns with regard to the difficulties that UHF stations may face under the current service replication plan in providing DTV service within their core market or Grade A service areas and in competing with the higher-powered DTV service of existing VHF stations. Accordingly, on reconsideration of this issue, we find that additional measures are needed to allow UHF stations to better serve their core market areas and to reduce the disparities that are inherent in the current service replication process.

80. We first agree with MSTV, the Joint UHF Broadcasters, Sullivan and others that a *de minimis* standard for permissible new interference is needed to provide flexibility for broadcasters in the implementation of DTV. This will provide additional opportunities for stations to maximize their DTV coverage and service through increasing their power and/or making other changes in their facilities. We therefore are replacing the current standard that specifies that changes in DTV operations may not cause any new interference with a new *de minimis* standard along the lines suggested by the Joint UHF Broadcasters and MSTV.[55] Under this new *de minimis* standard, stations will be permitted to increase power or make other changes in their operation, such as modification of their antenna height or transmitter location, where the requested change would not result in more than a 2 percent increase in interference to the population served by another station; provided, however, that no new interference may be caused to any station that already experiences interference to 10 percent or more of its population or that would result in a station receiving interference in excess of 10 percent of its population. Parties requesting such changes shall be required to submit an engineering showing that the change

[53] We note that the service replication concept was overwhelmingly supported by the broadcast industry over the alternative approach that sought to equalize the service areas of all stations. See, for example, Sixth Further Notice at para. 13.

[54] The assigned power represents the maximum ERP permitted for each individual allotment. DTV stations may operate at lower ERP provided they continue to serve their community of license.

[55] The current no new interference standard is set forth in Section 73.623(c)(2), 47 CFR 73.623(c)(2).

comports with the *de minimis* standard. The station population values for existing NTSC service and DTV service contained in Appendix B of this Memorandum Opinion and Order are to be used for the purposes of determining whether a power increase or other change is permissible under this *de minimis* standard.

81. To ensure that parties have a fair opportunity to take advantage of our new *de minimis* approach, we initially are limiting maximization requests for increased power by UHF DTV stations to 200 kW.[56] We therefore will not accept requests by UHF DTV licensees to increase their service area through a maximization of power above 200 kW until substantial progress has been made in the rollout of DTV service. This initial limit on the ability of stations to maximize power beyond 200 kW should put all licensees and permittees on a more equal footing and will give the Commission flexibility to accommodate other facilities changes that will be essential to some applicants. As suggested by the Joint UHF Broadcasters based on computer studies by MSTV, almost 700 of the about 850 stations with less than 200 kW could increase their DTV facilities to 200 kW without creating more than 1 percent interference to any NTSC station. We therefore believe that our 2 percent *de minimis* standard will provide major relief for stations seeking to increase their facilities. We do not find that a more complicated standard that would take into account aggregate interference, include different levels of interference and geographic considerations, or limit interference increases to only NTSC stations, as suggested in the recent filings, is necessary. Such a standard would also be more complex and difficult for broadcasters and the Commission to apply and administer.

82. We also are adopting an approach that will allow stations to increase their power within their existing DTV service areas using beam tilting techniques, as suggested by Sinclair, Fox and ALTV. We believe that use of techniques that permit increased power within a station's core service area will allow all UHF stations to better achieve full replication of their Grade A coverage, will preserve the interference protection built into the current DTV Table, and will not impede the ability of NTSC VHF stations to provide DTV service to their Grade B viewers.

83. We find that the comprehensive plan suggested by ALTV in its *ex parte* letter, with some modification, offers an appropriate model for providing for increased power within a station's service area through using antenna beam tilting techniques.[57] Under the approach we are adopting, a UHF DTV station will be permitted to increase its power up to a maximum of 1000 kW, provided antenna beam tilting techniques are employed so that the field strengths at the outer edge of the station's service area are no greater than the levels that our model predicts would exist if the station were operating at its assigned DTV power. In addition, we will require that the field strengths at the edge of the service area be calculated assuming 1 dB of additional

[56] As discussed below, stations may, however, increase power above 200 kW *within their service areas* through the use of antenna beam-tilting techniques.

[57] These techniques apply antenna beam tilting beyond the up to 1 degree antenna declination that is typically used in broadcast television transmitter antenna installations.

antenna gain over the antenna gain pattern specified by the manufacturer. This will effectively reduce the permissible field strength at the edge of the service area of a station using antenna beam tilting from 41 to 40 dBu, but will allow much higher field strengths in the Grade A or core areas. We believe that providing for a 1 dB margin in antenna gain will provide additional assurances that this approach will not result in increased interference above our *de minimis* standard. This margin will also serve to minimize the potential for increased interference where the beam tilting is reduced due to deflection of the antenna by wind and avoid the need for complex and expensive procedures for resolving disputes that might occur as a result of power increases under this option.

84. As suggested by ALTV, a station desiring to operate at a higher power level than that specified for it in the DTV Table shall submit, with its initial application for a DTV construction permit or subsequent application to modify its DTV facilities, an engineering analysis demonstrating that the predicted field strengths and predicted interference within its service area comport with the above requirements. Stations seeking to operate at higher power levels under these provisions will be required to notify, by certified mail, all stations that could potentially be affected by such operation at the time the station files its application for a construction permit or modification of facilities. Potentially affected stations to be notified include stations on co-channel and adjacent channel allotments that are located at distances less than the minimum geographic spacing requirements in section 73.623(d)(2). A station that believes that its service is being affected beyond our *de minimis* standard may file an opposition with the Commission. Such an opposition shall include an engineering analysis demonstrating that additional impermissible interference would occur. In certain instances, grants for increased power may be conditioned on validation of performance through field measurements of actual station operation by the station licensee or opposing parties.

85. We believe that the above measures adequately address the UHF power disparity matter. We do not believe that an across the board increase for all UHF stations, as suggested by Viacom and others, is warranted or desirable. Similarly, we do not find that we should employ a more lenient standard for the determination of interference within the Grade B contour of a station or amend the UHF receiver noise figure to increase authorized station power, as suggested by a number of parties. Such approaches could lead to substantial additional interference that would be detrimental to the television service provided to viewers. Further, we do not find that it would be appropriate to act on requests for maximization of DTV facilities in the context of this reconsideration. We have adopted specific provisions in our rules to allow licensees to request an increase in their DTV facilities and believe that to consider maximization requests as part of reconsideration would unfairly disadvantage parties that have expected such maximization requests to be dealt with under the rules. Accordingly, we are not herein acting on requests to maximize DTV station facilities. At the same time, we are aware of petitioners' concerns that our consideration of individual requests for modification not delay the DTV implementation process. We therefore will consider any requested change meeting the new *de minimis* standard a minor modification and treat such requests under those application processing procedures. Finally, to ensure that all parties are fully aware of our procedures and priorities for processing

full service broadcast television applications, we are directing the staff to issue a public notice on this subject in the near future.

86. Upon reconsideration, we agree with the Joint MSTV Petitioners that the definition of DTV service area should be amended for stations subject to the 1000 kW power cap. We therefore will amend the service area definition contained in Section 73.622(e) to include all of the geographic area that is served by such DTV stations and is within the Grade B area of the associated NTSC station. This will ensure that the statistics associated with the DTV Table comport with the rules. We reiterate our statement in the Sixth Report and Order that we will entertain requests for a limited number of stations to experiment at power levels higher than those specified in the DTV Table.[58] We are also clarifying the rules to make clear that the DTV service area that is to be protected from interference is to be calculated using the technical parameters specified for each individual allotment.

E. DTV Adjacent Channel Operation

87. In the Sixth Report and Order, we adopted an "emissions mask" that limits out-of-channel emissions from a DTV station's transmitter. Specifically, we required that: 1) at the channel edge, transmitter emissions must be attenuated no less than 46 dB below the average transmitted power; 2) more than 6 MHz from the channel edge, emissions must be attenuated no less than 71 dB below the average transmitted power; and 3) at any frequency between 0 and 6 MHz from the channel edge, emissions must be attenuated no less than the value determined by the following formula:[59]

> Attenuation in dB = $46 + [(\Delta f)^2/1.44]$; where: Δf = frequency difference in MHz from the edge of the channel.

In addition, in those cases where it was necessary to use adjacent channels in the same area, we paired and co-located adjacent NTSC and DTV channels to the extent possible.

88. Cannell, Fox, Gannett, the Joint MSTV Petitioners, Lincoln, Tribune and others request that we re-evaluate the criteria used in making DTV allotments on first-adjacent channels to NTSC channels. Cannell argues that DTV operation on a channel that is first-adjacent to an NTSC channel and that will operate close to or within the NTSC station's Grade B contour may cause excessive interference to the NTSC operation. It requests that we reconsider this aspect of our allotment methodology to determine whether DTV channels could be allotted without creating interference to first-adjacent NTSC operations. Fox submits that we should develop a lower sideband emissions mask for NTSC stations located within 100 km of DTV stations operating on lower adjacent channels. It states that this would minimize interference and allow

[58] See Sixth Report and Order, at para. 30.

[59] See 47 CFR 73.622(h).

more efficient use of the spectrum. Lincoln requests that we provide for streamlined and expedited treatment of applications for alternative channels by stations with DTV channels that are adjacent to other TV operations if use of adjacent channels proves infeasible. Tribune submits that the Charlotte DTV field tests have confirmed the existence of sideband splatter in adjacent DTV channels that would be permitted by our emissions mask.

89. The Joint MSTV Petitioners acknowledge that there are not enough potential DTV channels to avoid assigning adjacent channels in the most congested markets. They note that we have generally assigned adjacent DTV allotments so as to provide exact co-location and reduce interference, as they have suggested. Nonetheless, they are concerned that the existing DTV transmitter emissions mask will not ensure sufficient protection of NTSC service. They now favor a weighting-function approach developed by the Advanced Television Systems Committee (ATSC) over the mask above.[60] The ATSC, in its comment filing, submits that its weighting function for DTV transmitters will provide greater protection of adjacent NTSC channels than will result from the fixed emission mask currently specified in the rules. The Advanced Television Technology Center (ATTC), in its comment filing, states that recent tests indicate that the RF mask contained in the Sixth Report and Order should be re-evaluated. It submits a report that it states shows that DTV-to-DTV adjacent channel interference in the presence of sideband splatter, the dominant interference mechanism in the adjacent channel scenario, has been significantly underestimated in the DTV planning factors.[61] Based on new testing, ATTC now states that the minimum desired-to-undesired (D/U) ratio for DTV-to-DTV lower adjacent channel operation should be about -23 dB rather than about -42 dB; and that the minimum D/U ratio for DTV-to-DTV upper adjacent channel operation should be about -21 dB rather than about -43 dB. Based on these results, ATTC recommends that the RF mask requirement be eliminated and that instead the total sideband power of the DTV signal be limited. Comark, in late-filed comments, submits that we should: 1) maintain the emissions mask adopted in the Sixth Report and Order for cases where there are no adjacent channel assignments; adopt the weighting function mask developed by the ATSC where DTV channels are adjacent to NTSC channels; and, 3) limit the total power integrated over the 6 MHz adjacent channel in cases where DTV channels are adjacent to another DTV channel.

90. In its *ex parte* filing, MSTV states that it has completed further analysis with regard to the DTV-to-DTV adjacent channel problem. It indicates that the DTV Table of Allotments contains about 250 adjacent DTV channel assignments that are too close together given the new information about DTV adjacent channel interference. It includes a list of these channel pairs

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[60] See "Transmission Measurement and Compliance for Digital Television," ATSC Standard A/64, November 17, 1997. The Joint MSTV Petitioners indicate that this standard is based on use of a weighting function to determine the noise power due to DTV sidelobes allowable in each of twelve 500 kHz frequency bands across the 6 MHz NTSC channel.

[61] See " An Evaluation of the FCC RF Mask for the Protection of DTV Signals from Adjacent Channel DTV Interference," Advanced Television Technology Center, Document #97-06, July 17, 1996.

and states that "(t)his short-spacing will significantly reduce the DTV service areas by up to 60 percent for nearly 130 stations (or at least one in each pair of adjacent channels)."[62] It also includes an exhibit that shows recalculations of the coverage and interference figures for the DTV Table based on new adjacent channel interference values.

91. MSTV also submits that its suggested 357 changes to the DTV Table would cure the short-spacing of all cases of DTV-to-DTV adjacent channels.[63] It states that about two-thirds of these changes address the DTV-to-DTV adjacent channel situation. It further states that in developing these changes, efforts were made to preserve most of the current DTV allotments. It asserts that changes were made only where called for by the most extreme cases of interference. It also reiterates that one way to slightly lessen the impact of adjacent channel interference problems would be to replace the fixed mask adopted in the Sixth Report and Order with a mask that limits total average power in the adjacent channel, weighted for DTV-to-NTSC adjacencies and unweighted for DTV-to-DTV adjacencies.

92. Decision. We agree with the petitioners and other commenting parties that revisions are needed to reduce the potential for adjacent channel interference. We believe that a solution that includes tightening the DTV emissions mask, making a number of specific DTV allotment changes where needed, and providing flexible administrative processes to encourage adjacent channel co-locations[64] offers the best approach for addressing adjacent channel interference concerns.

93. The current DTV transmitter mask requires that the total out-of-band emissions in the adjacent 6 MHz channel be attenuated by 39 dB relative to the transmitter's in-band average power. We are revising this emissions mask to require an additional 5 dB of attenuation of the total out-of-band emissions in the adjacent channel. This new emission standard will apply to all DTV stations. We believe that this further reduction in out-of-band emissions is economically practicable with the available technology for broadcast transmitters and will help to reduce all cases of potential for interference, including DTV-to-NTSC and DTV-to-DTV adjacent channel situations. Accordingly, we are revising the DTV out-of-band "emissions mask" to require that: 1) in the first 500 kHz from the authorized channel edge, transmitter emissions must be attenuated no less than 47 dB below the average transmitted power; 2) more than 6 MHz from the channel edge, emissions must be attenuated no less than 110 dB below the average

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[62] See MSTV *ex parte* filing at p. 7.

[63] MSTV states that its improvements address both acute problem areas, i.e., the Northeast, Great Lakes region and the California coast, and the DTV-to-DTV adjacent channel problem. The adjacent channel changes permit DTV-to-DTV adjacent channel assignments located at 70 km or more from each other, according to MSTV.

[64] In the Sixth Report and Order, we stated that to provide broadcasters additional flexibility in constructing their DTV facilities, we will allow stations to relocate to other transmitter sites or co-locate their facilities with other stations where such relocations and co-locations would not increase interference. See Sixth Report and Order, at para. 102.

transmitted power; and 3) at any frequency between 0.5 and 6 MHz from the channel edge, emissions must be attenuated no less than the value determined by the following formula:[65]

> Attenuation in dB = -11.5(Δf +3.6); where: Δf = frequency difference in MHz from the edge of the channel.

All attenuation limits are based on a measurement bandwidth of 500 kHz. This mask will lower the power radiated in the adjacent channel as compared to our current RF mask by approximately 5 dB to a level of -44 dB below the average power transmitted. Other measurement bandwidths may be used as long as the appropriate correction factors are applied. As with our original mask, in the event interference is caused to any service, greater attenuation may be required.

94. We note that the ATTC test results can be interpreted to indicate that all calculations involving D/U ratios for adjacent channel operation should be changed by a factor of about 20 dB; and, in fact, MSTV in its re-tabulation of DTV coverage and interference took this approach.[66] However, predictions of service areas and interference are complex matters. The estimates contained in the DTV Table are based on the assumption that the interfering and desired signals are not correlated when it comes to signal fading. That is, the methodology assumes that the desired signal is at its weakest or minimum level and the undesired signal is at its strongest or maximum level at any particular point.[67] At the edge of the station's service area, this results in very large differences in desired and undesired signal levels. In practice, however, adjacent channel signals from co-located or closely-located sources tend to be highly correlated since the signals travel over the same or nearly the same path and are affected by the same propagation and weather conditions. In these instances, the signals tend to exhibit the same fading characteristics and large differences due to propagation factors do not occur. Recent studies by our laboratory confirm this correlation. We therefore believe that a more accurate modeling of service coverage and interference would take this correlation into account and that the service coverage and interference for many adjacent channel situations will be better in practice than the estimates shown for the DTV Table.

95. As indicated above, we are also making a number of specific DTV channel allotment changes to eliminate DTV-to-DTV adjacent channel situations where such allotments resulted in significantly reduced DTV service areas. In this regard, we are changing 42 DTV allotments.[68]

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[65] See 47 CFR 73.622(h).

[66] See MSTV *ex parte* filing, Exhibit 1B, "FCC DTV Table with Corrected Coverage and Interference Figures."

[67] The methodology assumes a value for the desired signal that occurs at 50% of the locations for 90% of the time, and a value for the undesired signal that occurs at 50% of the locations for 10% of the time.

[68] The 42 allotments changed to eliminate adjacent channel interference are listed in Appendix C. In general, we attempted to eliminate adjacent channel allotments wherever a station received a DTV allotment that resulted in less than 95 percent service area replication or did not provide an increase in the population served.

These changes include many of the changes suggested by MSTV, including its proposal for the San Francisco, California area. We are not, however, making all of the adjacent channel changes suggested by MSTV. We note that many of the DTV allotments for which MSTV raised a concern would still provide a high degree of service replication and/or provide DTV service areas larger than their NTSC service area even taking into account the new adjacent channel test data. We further note that some of the changes requested by MSTV would not provide significant improvements in service or replication, or raise other concerns such as out-of-core operation. Furthermore, as a general matter, we do not believe that simply changing DTV allotments is an appropriate universal solution to the adjacent channel matter. As the Joint MSTV Petitioners acknowledge, there are not enough potential DTV channels to avoid any assignment of adjacent channels. Further, even if that could be done in all instances, we recognize that many stations may be forced to implement their DTV operations at locations other than their NTSC transmitter sites, and that these new, yet unknown, locations may create additional adjacent channel concerns. We therefore believe that a solution that includes tightening the emissions mask, allowing flexibility in our licensing process and for modification of individual allotments in the DTV Table to encourage adjacent channel co-locations, and continued monitoring of this situation, offers the best approach in a dynamic process like the implementation of DTV. We also note that petitioners' proposal raises other concerns, such as operating on channels outside the core spectrum, on channels 60-69, or on spectrum shared with land mobile services, that must also be weighed against slight increases in service replication and DTV coverage. We believe that our improved emissions mask and DTV channel changes provide the appropriate balance between all of these factors.

F. Low Power and TV Translator Stations

96. In the Sixth Report and Order, we recognized that in providing all full service TV stations with a second DTV channel, it will be necessary to displace a number of LPTV and TV translator operations, especially in the major markets. This determination was based on studies by our staff and by our Advisory Committee on Advanced Television Service (Advisory Committee) that indicate there is insufficient spectrum available in the broadcast TV bands to factor in low power displacement considerations in making DTV allotments.[69] Notwithstanding our decision to maintain the secondary status of low power stations, we indicated that we were concerned about the effect of DTV implementation on low power services, especially the impact with regard to LPTV stations for which the likelihood of displacement is greater, and therefore took steps to minimize the impact on those stations. We adopted a number of changes to our rules in order to provide additional flexibility to accommodate low power operations during and after the transition to DTV, and thereby substantially mitigate the impact of DTV

[69] See "Interim Report: Estimate of the Availability of Spectrum for Advanced Television (ATV) in the Existing Broadcast Television Bands," OET Technical Memorandum, FCC/OET TM88-1, August 1988 and, "Interim Report: Further Studies on the Availability of Spectrum for Advanced Television," OET Technical Memorandum, FCC/OET TM89-1, December 1989; and, "Preliminary Analysis of VHF and UHF Planning Subcommittee Working Party 3, Doc. 0174 (June 1991).

implementation on this segment of the television industry. We estimated that these changes will permit hundreds of LPTV stations and TV translators to continue providing service to their viewers.

97. We first took a number of steps to assist low power stations in relocating to new channels. In this regard, we allowed low power stations that are displaced by new DTV stations to apply for a suitable replacement channel in the same area without being subject to competing applications.[70] We also amended our rules to provide that such applications will be considered on a first-come, first-served basis, without waiting for the Commission to open a low power application window. Under this process, the low power licensee requesting such a channel or related facilities change submits an application for the requested channel change. If no other prior requests for that channel had been made within the same area and the application is acceptable for filing, the Commission would propose to grant the application. Assuming no negative comments or petitions to deny, the request would be granted at the end of the 30 day period.

98. We stated that we would extend this "displacement" relief measure to LPTV and TV translator licensees and permittees whose facilities are predicted to conflict with a DTV station. Applications for such relief may be filed when there would be a reasonable expectation of displacement; for example, upon the filing of an application by a full service broadcaster for a DTV channel that would conflict with operation of the LPTV or TV translator station. We stated that as secondary operations, LPTV and TV translator stations will be permitted to operate until a displacing DTV station or a new primary service provider is operational. We also permitted low power stations to file non-window displacement relief applications to change their operating parameters to cure or prevent interference caused to or received from a DTV station or other protected service.[71] In this regard, we stated that we will continue to allow low power operations on all existing TV channels, including channels 60-69, provided that such operations do not cause harmful interference to any primary operations. We stated that we will also permit displaced LPTV or TV translator stations to request operation on these channels on a non-interfering basis. We found that the current interference rules for low power operations are overly restrictive and adopted a number of rule changes that will provide additional operating flexibility for low power stations.

99. In addition to these processing and technical rule changes, we stated that we would

[70] This streamlined low power licensing procedure also applies to a requests for any channel change from a low power station that is displaced by a DTV station. A channel change request can include a replacement channel for NTSC operation or a channel change to be used for DTV operations, on a case-by-case basis. We stated that we will also permit displaced stations to request an increase in power or other facility modifications necessary to avoid interference or permit it to continue serving its current coverage area.

[71] LPTV and TV translator stations will be allowed to continue to operate provided they protect full service DTV operations in accordance with the desired-to-undesired signal ratios used for modifications to the DTV Table of Allotments.

consider providing relief for low power stations in a number of other ways. We stated that we will entertain requests to waive the LPTV protection standards where it can be demonstrated that proposed LPTV or TV translator stations would not cause any new interference to the reception of TV broadcast analog stations. We also stated that we will entertain waiver requests for low power and TV translator applications proposing co-located or nearly co-located facilities to those of TV broadcast analog stations operating on the first adjacent channel above or below, or the fourteenth adjacent channel below. We stated that until we gain some experience with near co-located operations, we are inclined to limit consideration of such waivers to applications for "displacement relief" filed by LPTV and TV translator permittees and licensees in jeopardy of losing their channels. We next stated that we will consider waiving the LPTV interference protection standards when the applicant obtains the written consent of the potentially affected NTSC or DTV licensee or permittee to the grant of the waiver. This policy, which has worked well for terrain shielding waivers, permits a full service licensee or permittee to concur that interference is unlikely, but without absolving the LPTV or TV translator applicant of the responsibility to eliminate interference caused to the regularly viewed signal of the station. Finally, we amended our low power rules to replace the existing transmitter power (TPO) limits with limits for effective radiated power (ERP).

100. Many petitioners representing the interests of low power television and TV translator stations continue to express concern for the impact of DTV implementation on these stations. As stated by the Urban LPTV Parties, these parties generally urge that we keep a sense of proportion in considering the public interest gains and losses from the particulars of the DTV allotment plan. They state that we should tread very lightly where the very survival of these stations during the transition is an issue. As discussed below, these parties submit requests urging that we modify and amend our policies and rules in a number of ways to ensure the viability and survivability of LPTV stations in a digital world.

(1) Protection of Secondary Low Power Stations

101. CBA, Paxson Communications LPTV, Inc. (Paxson LPTV), and Skinner Broadcasting, Inc. (Skinner) request that we reconsider the meaning of secondary status with respect to low power stations. Paxson LPTV argues that we must reconsider our decision not to accommodate low power stations in developing the DTV Table. CBA submits that while those opposing relief for LPTV stations on the basis that such stations are secondary operations often cite Polar Broadcasting, *et al.* v. FCC, 22 F.3d 1184 (1994) to support their position, the Polar case is not dispositive. CBA argues that Polar was decided in a different environment than exists today, where we have in one action doubled the number of television allotments and reduced the total number of channels available for television service. It argues that because of these differences we must undertake every effort to facilitate LPTV survival.

102. Skinner argues that we should conduct a reasonable Regulatory Flexibility Analysis, and must review, pursuant to Section 307(b) of the Communications Act of 1934, as amended, the impact of our decision on communities that will lose LPTV or TV translator

service. It argues that we failed to comply with the Section 307(b) mandate that we consider community needs prior to displacing facilities that cannot be replaced on other channels to serve the same community. It contends that our claim that low power service is secondary is an inadequate defense to our failure to make any analysis of the effect of the DTV Table on either the licensees or the communities affected by LPTV/TV translator displacement, since no LPTV or TV translator licensed earlier than five years ago ever envisioned the extent of displacement that would occur on a national scale. Skinner further argues that we should hold in abeyance the implementation of the analog-to-digital television conversion, particularly the dual-channel simulcasting provisions, until a reasonable system has been implemented for reimbursing, or otherwise re-accommodating displaced low power stations.

103. CBA, Cordillera, KMC, KPDX, Paxson LPTV, Skinner, and WHNS request that we revise the DTV Table to protect and/or accommodate low power stations. CBA argues that the DTV Table adopted Sixth Report and Order will result in the displacement of at least 160 operating LPTV stations and that these displacements are not necessary to accommodate the transition to digital television.[72] It submits that the forced elimination of so many LPTV stations will concentrate television broadcasting in large markets at the expense of smaller communities. In arguing for reconsideration, CBA notes that the DTV Table of Allotments was generated without any penalty in the computer software for displacing LPTV stations. It contends that this omission was contrary to the public interest because it resulted in the allotment program selecting many of the same channels for DTV service that LPTV search programs have found for LPTV stations, when alternatives were readily available for DTV use. Cordillera argues that LPTV and TV translator operations should be protected throughout the DTV conversion process, since these stations provide extended coverage for "primary" stations.

104. CBA states that it undertook to accommodate LPTV stations in the allotment process using our allotment software. CBA states that to do this it modified the TV data base to include operating LPTV stations and added instructions to the program to avoid displacing an operating LPTV station unless no other way were available to provide a DTV channel for a full service station. It submits that using this approach it was able to develop an alternative Table that saves a substantial number of LPTV stations. CBA includes a copy of this Table with its petition.[73] CBA states that the point is not that its Table is optimal, but that it has shown that the

[72] CBA states that in preparing to analyze the DTV Table, it circulated a questionnaire to as many LPTV stations as it could find, so that it could compile as accurate a data base as possible of stations actually on the air and the facilities they use. Based on this survey, CBA submits that the DTV Table will cause the displacement of 160 operating LPTV stations.

[73] In its supplemental filing, CBA states that it inadvertently submitted the results of the wrong computer run with its petition. It submits that the proposed Table included with its petition should be discarded and that we should substitute the Table attached to this filing. It states that its use of the allotment software did not produce ideal results, but is the best it could do given our decision to adopt a DTV Table on April 3, 1997. CBA states, however, that its Table does much more to protect LPTV stations than does the DTV Table adopted by the Commission, with only a small price in additional interference.

transition to DTV service can be achieved without ignoring LPTV stations and without wholesale displacement of the LPTV industry. In order reduce the impact on these LPTV stations, it requests that we substitute the CBA Table for the current Table or generate a new Table using a significant penalty for displacing LPTV stations. In its most recent filing, CBA indicates that it has modified the Commission's computer program to include an algorithm that avoids displacing LPTV and TV translator stations where possible.[74] This is done by placing a small penalty for the use of a channel for DTV that is currently used by a low power station. CBA states that algorithm can be used so that it doesn't impact full service stations in the three congested or problem areas; impede the rollout of DTV in the top 30 markets; or, affect channels that have already been applied for. CBA states that it has used this algorithm to create a new DTV Table that would reduce the number of co-channel LPTV/TV translator displacements from 779 stations to 477 stations, with an increase in overall interference to full service stations of about 2.5 percent.

105. CBA also requests that we allow LPTV stations to request changes in the DTV allotments for individual full service stations in order to avoid displacement of LPTV stations. Specifically, CBA requests that we provide that if a potentially displaced LPTV station files a request to amend the DTV Table, *i.e.* modify one or more DTV allotments for full service stations, so as to avoid displacement, and the LPTV station's proposal meets the spacing and other requirements of the DTV rules, there will be a strong presumption that the public interest requires a grant. It argues that a request to substitute digital allotments should not be rejected unless the full service station would be significantly worse off as a result and that all channels should be considered equally in determining which channel is made available to a particular full service station.

106. Decision. We continue to believe that our decision to retain the secondary status of low power stations with regard to digital television and other new primary television services is appropriate. As indicated above, studies throughout this proceeding, by industry and our staff, have indicated that it would be necessary to displace a significant number of low power TV and TV translators in order to implement DTV service. As secondary operations, low power stations must give way to new operations by primary users of the spectrum, including in this case new full service DTV stations operated by existing broadcasters under our DTV implementation plan. While we recognize the important services low power stations provide, we must ensure that our goals for the implementation of DTV are achieved before taking any additional steps to minimize the impact on these secondary operations. We disagree with the petitioners that the fact that we have significantly increased the use of the TV spectrum by primary stations warrants modifying the secondary status of these stations. We also continue to find that our Regulatory Flexibility Analysis in the Sixth Report and Order with regard to low power stations, including our assessment that there will be impact on these stations and that we have taken steps to minimize that impact, adequately evaluates the effects of our DTV implementation decisions on these

[74] See *Ex Parte* Supplement to CBA's petition for reconsideration filed December 15, 1997.

stations. Skinner provides no new information that indicates that this analysis was in error, that we failed to comply with the requirements of Section 307(b) in allowing displacement of low power stations, or that supports its request that we delay the implementation of DTV service in order to take steps to accommodate low power operations.

107. We are not making a general revision of the DTV Table to protect or otherwise accommodate low power stations as requested by many low power operators. As a general matter, measures to accommodate low power stations would, by their very nature, pose restrictions on our choice of allotments for full service DTV stations. Using the software algorithm and approach recommended by CBA, we have, however, been able to identify a limited number of cases in certain areas of the country where it is possible to avoid using a channel occupied by low power stations by providing full service stations with an equivalent alternative DTV channel.[75] These equivalent alternative channels will allow the stations to implement their DTV service without affecting their ability to replicate their existing service or any technical planning these stations may have already undertaken for DTV implementation. From our studies with this software we were able to identify171 potential DTV allotment changes. We found that in 66 of these cases, a channel change could be made that would not affect the operations of full service stations. These 66 changes eliminate 36 co-channel conflicts with one or more low power stations. We therefore are modifying the DTV Table to adopt these 66 DTV channel changes. We wish to emphasize that in making these changes we are not altering the secondary status of low power stations. Rather, we find that these changes can be made without impacting either the DTV service of the associated full service stations or our overall DTV implementation goals and therefore should be made to preserve low power services.

108. We are not granting requests by low power licensees to change the channels of individual full service DTV allotments in order to avoid displacement of low power stations. Except for the changes identified through the CBA algorithm, as discussed above, we find that the requests to change DTV channels to protect low power operations would adversely affect the

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[75] In using the CBA approach, we excluded from consideration the three regions of the country noted by the Joint MSTV Petitioners where congestion among full service station already makes it more difficult to find acceptable DTV channel changes. We also excluded states bordering Canada in order to ensure that no conflicts would arise with our coordination efforts with that country. In states bordering Mexico, we took into account the spacing criteria for DTV allotments set forth in our April 2, 1997, Memorandum of Understanding with Mexico. See "Memorandum of Understanding Between the Federal Communications Commission of the United States of America and the Secretaria de Comunicaciones y Transportes of the United Mexican States Related to the Use of the 54-72 MHz, 76-88 MHz, 174-216 MHz and 470-806 MHz Bands for Digital Television Broadcasting Service Along the Common Border," signed April 2, 1997. Replacement channels were considered acceptable if they would provide the same replication as a station's existing DTV channel and were within 3 channels above or below that channel. With regard to the latter criterion, we believe that a change within 3 channels would not affect any DTV technical plans or preparations that a station might already have in place. The software used in our implementation of CBA's algorithm included modifications for all of the revisions we are making herein to address full service station issues. In addition, we revised our data base to reflect all of the other modifications we are making to the DTV Table herein. Those modifications and all allotments in the excluded areas were "frozen" in this study and not made subject to change.

ability of full service stations to replicate their existing service and would also lead to increased interference. We recognize, however, that there may be instances where a full service station is willing to accept a modification of its DTV allotment in order to protect one or more low power stations. We believe it is desirable to preserve low power stations in this manner wherever possible. We therefore will consider changing DTV allotments to protect low power stations where the affected full service station agrees to the change.[76] In this regard, we encourage low power and full service licensees to work together to develop modifications to the DTV Table that will preserve the service of low power stations.

(2) Displacement Relief

109. A number of parties, including AAPTS/PBS, CBA, DSD, First Cullman Broadcasting, Inc. (First Cullman), KMC, KPDX License Partnership (KPDX), the National Translator Association (NTA), Paxson LPTV, the Urban LPTV Parties, and Venture Technologies Group (VenTech), request that we refine and in some areas revise the low power displacement rules. Several parties request that we clarify or change the rules defining when a TV translator or LPTV station is considered displaced.[77] These petitioners generally submit that it should not be necessary to wait for a displacement-causing DTV construction permit to be issued before an LPTV or TV translator station can file for displacement relief. CBA states that the timetable for full service DTV implementation is too short for LPTV stations to wait for a full service filing before they start implementing their own displacement plans. It submits that an early opportunity should be afforded for filing for displacement relief, whether through the first-come, first-served approach, a filing window or otherwise. DSD and the Urban LPTV Parties submit that the DTV Table itself evidences displacement of the affected channels because virtually all incumbent full service broadcasters are expected to confirm their acceptance of the second channel and because allotments not claimed will remain on the books for early use by those not in the rolls of the initially eligible. Paxson LPTV specifically requests that we open a window for filing these applications upon issuance of our decision addressing the petitions for reconsideration. NTA and DSD also request that translator and LPTV stations on channels 60-69 have immediate displacement relief privileges on a par with specifically displaced LPTV and TV translator stations.

110. CBA, KMC, and Paxson LPTV request that we establish clear procedures for relief for displaced low power stations. These parties generally state that the opportunity for the filing of displacement applications must be structured in a fair manner that maximizes the number of LPTV stations that can be accommodated. DSD, along with NTA, submits that we should clarify that any predicted interference relationship with any allotted DTV channel will satisfy as the necessary showing for displacement relief. NTA states that this approach would provide low

[76] We are also applying this policy to our consideration of petitions for reconsideration that seek to change individual DTV allotments in order to protect low power stations.

[77] See Section 74.702(b) of the rules, 47 CFR 74.704(b).

power stations with the greatest flexibility in deciding when to apply for relief.

111. CBA offers suggestions for some general approaches for providing displacement relief. First, it states that if a window is opened, either the initial window should be reserved for displacement relief or else displacement applications should be given priority over other kinds of modification applications. Second, CBA states that if two LPTV stations file for the same displacement channel and one of the applicants is able to identify an alternative substantially different channel for the other, the other should be required to amend its application to specify the alternative channel. To facilitate such changes, it states that amendments should be permitted without requiring a new window. CBA further submits that once an opportunity has been afforded for early displacement relief, we should also afford an opportunity for LPTV stations to file applications to take advantage of the new effective radiated power limits adopted in the Sixth Report and Order.

112. VenTech argues that we should not allow suburban and rural LPTV and TV translator stations to take frequencies needed for the survival of urban, major market LPTV stations. It argues that urban LPTV stations should be provided with priority in frequency use over these other stations because their location precludes the use of other possible channels. AAPTS/PBS request that we give PTV translator stations priority over other translators and low power TV stations in finding new channels when they are displaced by DTV facilities, by new NTSC stations commencing operation or by changes in the facilities of existing NTSC stations. The Urban LPTV Parties request that we not re-open filings for LPTV and TV translator stations until an adequate opportunity has been provided for incumbent licensees and permittees to appraise the likely impact of DTV implementation on their operations and to protect a new (displacement) channel through early filing. Los Cerezos Television Company (Los Cerezos) notes that, under the existing rules, a displaced LPTV station may not use the displacement rules to apply for any channel for which there is a pending mutually exclusive application, regardless of whether the pending application is for a new station or for modification of an existing station. It states that we should modify this rule and give displaced LPTV stations like its WMDO-LP preference over pending mutually exclusive LPTV applications for new stations or major modifications to existing stations that are not necessitated by new DTV allotments.

113. CBA, DSD, KMC and the Urban LPTV Parties request that displacement relief be treated as a minor modification of the license. DSD, for example, states that treating facility changes for existing translator and LPTV permittees and licensees that comply with the new power and separation requirements as minor changes would dispense with displacement relief showings. Under this approach, to receive consideration as a minor change an application would need to include an engineering certification to show that a frequency study had been performed and that the requested change otherwise would be in full compliance with the rules. KMC notes that the rules for minor modifications in Section 73.3572(a)(2) should be amended to reference Section 74.706 as well as Section 74.705.

114. First Cullman requests that we require full service television stations whose DTV

services will displace LPTV stations to keep the displaced LPTV stations accurately informed as to their application and construction plans relating to those services. It states that for low power licensees, and especially those that are nonprofit community organizations that are dependent on community support, a long lead time for planning and raising funds may be essential to successfully deal with a DTV displacement. First Cullman therefore states requiring full service stations to provide timely information about their DTV plans to any low power stations they will displace would ease the disruption and financial hardship that the displacement will cause.

115. NTA notes that in GEN Docket No. 85-172, a total of forty TV channels in eight cities were considered as candidates for assignment to land mobile services.[78] It states that even though these reservations have been in limbo for many years, there has been an informal policy at the Commission that requires protection of those channels just as though they had actually been assigned to land mobile use. NTA notes that under this policy, LPTV and TV translators stations must provide protection to these channels based upon a fifty mile radius from the associated city coordinates, and that the required protection includes limits on adjacent channel use as well as co-channel use. NTA also observes that the DTV Table ignores these tentative land mobile reservations and by implication abandons the proposals of GEN Docket No. 85-172. It states that release of these channels from the informal and unpublished freeze would provide considerable relief for translators and LPTV stations that will be displaced in major markets. NTA therefore urges that we make it clear that these channels are available to translator and LPTV stations.

116. Decision. We agree that some clarification of our rules regarding low power displacement relief is needed. In order that the displacement relief be made available in an equitable manner to all affected low power stations, we will consider an LPTV or TV translator station eligible for such relief where interference is predicted either to or from any allotted DTV facility.[79] Stations eligible under this criteria may apply for relief as of the effective date of this Memorandum Opinion and Order. All LPTV and TV translator licensees on channels 60 to 69 are also eligible to file such displacement relief applications at any time. We will not establish a

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[78] The Notice of Proposed Rule Making in GEN Docket No. 85-172, 50 FR 25587 (June 30, 1985), at para. 29, lists the following candidate TV channels for possible assignment for land mobile use: New York- channels 19, 27, 28, 33, and 34; Los Angeles- channels 26, 32, 36, 42, 48, 60 and 66; Chicago- channels 41, 47, 64, and 68; San Francisco- channels 18, 24, 28, and 34; Philadelphia- channels 26, 32, 42, and 46; Washington, D.C.- channels 30, 35, 36 and 39; Houston- channels 16, 35, 41, 63 and 69; and Dallas- channels 17, 35, 41, 62, and 66.

[79] Low power stations will be allowed to apply for displacement relief if their operations would be impacted by one or more allotments in the DTV Table. We will assume that a low power station is impacted if the spacing between the low power station and a DTV allotment is less than the following distances:

Stations on UHF channels-	265 km (162 miles)
Stations on VHF Channels 7-14-	260 km (159 miles)
Stations on VHF channels 2-6-	280 km (171 miles)

Engineering showings of predicted interference may also be submitted to justify a need for displacement relief.

special limited filing window for such applications. Rather, applications for displacement relief may be submitted at any time during the transition process. We believe this approach will establish a fair process for affected low power stations and provide such stations the greatest flexibility in deciding when to seek relief, as suggested by NTA. Because of the importance of preserving, to the extent possible, the existing LPTV programming service for its viewers, we believe that providing relief so that low power stations can continue to operate should have higher priority than requests to extend or alter existing service that is not affected by DTV implementation. Accordingly, as suggested by CBA, we are affording displacement relief applications priority over new station applications or other requests for modification by low power stations, including any such applications and requests that may be pending at the time the displacement relief application is filed. We will also permit displaced stations to seek modifications other than channel changes, including, where necessary, increases in effective radiated power up to the maximum allowed values.

117. We are not providing any additional priority for urban LPTV stations or PTV low power and TV translator stations in the displacement relief process as requested by VenTech and AAPTS/PBS. We believe that treating all potentially displaced low power stations in a fair and equitable manner is the most appropriate course of action. We note that low power stations provide a wide range of services to the public. We find no basis for preferring, for example, a PTV station over a station that provides foreign language service to the community, or for preferring an urban LPTV station over an LPTV or TV translator station that provides basic televison service to rural viewers.

118. As suggested by the Urban LPTV Parties, we will not open windows for filing applications for new LPTV and TV translator stations until existing low power licensees have had an adequate opportunity to assess the impact of the DTV Table on their stations and to seek displacement relief if necessary. This will maximize the availability of alternate channels and will also allow us to focus our administrative resources on the processing of displacement relief applications. Consistent with our existing procedures for processing requests for special relief in cases where an LPTV or TV translator has an actual or predicted conflict with an NTSC station or a land mobile radio operation, we will treat applications for displacement relief under our minor change procedures. This will allow displacement relief applications to be filed at any time and without being subject to competing applications, except where another application for special relief requesting the same or an adjacent channel is filed the same day. We will also follow our existing procedures for displacement applications in placing such applications on proposed grant lists. Consistent with this change, we will also amend Section 73.3572(a)(2) of the rules, which sets for the procedures for processing minor changes for all types of TV broadcast stations, to include a reference to Section 74.706 of the low power rules, which sets forth the standards for protection of DTV stations from interference by low power stations, as requested by KMC.

119. Given that we are allowing low power stations to apply for displacement relief at any time, we do not find it necessary to require full service television stations whose DTV

services will displace low power stations to keep the low power stations informed of their DTV application and construction plans. We do, however, encourage full service stations to coordinate their DTV construction schedules with low power stations in their area that may be affected. Low power licensees are also advised that the channels considered as candidates for assignment to land mobile services in eight major markets under GEN Docket No. 85-172 are available at this time for low power use and may be requested in displacement relief applications.

(3) Technical Rules for Low Power Stations

120. CBA requests that we eliminate or modify the new DTV protection requirement in Section 73.623, which requires that co-channel NTSC operations provide an additional 19 dB of protection to DTV service at the edge of a DTV station's noise-limited service area. It submits that this rule is not needed to avoid interference and will greatly complicate the task of finding new channels for displaced LPTV stations. In addition, CBA and NTA note that the new rules require that in the case of adjacent channel operation where a DTV station is immediately above an NTSC station, the carrier frequencies of the two stations be locked to a common reference frequency in order to reduce interference to the NTSC station. These petitioners request that we require DTV stations that are co-located with a lower adjacent channel LPTV station to match the frequency offset of the LPTV station as a method of reducing interference. NTA further requests that we require that the DTV station in such cases cooperate in making the necessary arrangements for maintaining an offset between the two signals, that each station bear any special costs relating to its own transmitter, and that any common costs such as the basic frequency source be shared equally.

121. Decision. The values for protecting DTV service from NTSC interference were derived from the ATTC's evaluation of the performance of the DTV system. The tests of the DTV system indicate that an additional 19 dB of co-channel protection from NTSC interference is needed when the DTV signal is weak, as is the case at the edge of a station's service area. While we recognize that this may complicate the task of finding replacement channels, we must maintain this standard to ensure protection of DTV service. Accordingly, we are not amending Section 73.623 to eliminate the additional 19 dB of protection to DTV service at the at the edge of a DTV station's noise-limited service area, as requested by CBA. We are, however, amending the low power television rules to specify the D/U values as a function of S/N values to provide a transition from 21 dB to 2 dB D/U for NTSC-into-DTV, and from 15 dB to 23 dB D/U for DTV-into-DTV.[80] These values are based on measurement data presented to our advisory committee. With regard to adjacent channel operation where a DTV station is immediately above an NTSC station, we agree with CBA and NTA that DTV stations that are co-located with a lower adjacent channel low power NTSC station should be required to cooperate and maintain the necessary offset to eliminate interference to the low power station. We note that the equipment necessary to lock to a common reference frequency is relatively inexpensive and should not be burdensome

[80] As discussed below, we are making a similar modification to Section 73.623(c) of the rules for modification of allotments included in the initial DTV Table of Allotments for full service stations.